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EXAMINER

LAM, VINH TANG

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,123	Applicant(s) NISHI, KENJI	
	Examiner VINH T. LAM	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 15-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/13/2008, 09/01/2006, & 05/19/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims **15-29** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species 2 and 3, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 01/06/2009.
2. Applicant's election without traverse of Species 1 in the reply filed on 01/06/2009 is acknowledged.

Drawings

3. Figures **26-28** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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4. The drawing (FIG. **1b**) is objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **$\lambda/4$ plate**.

5. The drawing (FIG. **12**) is objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **magic surface mechanism 42**.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claims **1** and **3** are objected to because of the following informalities: Ambiguity.

Claims **1** and **3** respectively recite "... an image display device that with it **being supported by a portion other than a user** ..." and "... an image display device that with it, **by a portion other than a user , being supported** ..." the limitations which are not clear because the image display device would be interpreted as:

- a. being supported by both supporting means and a user or
- b. one portion is supported by user and another separate portion is supported by supporting means.

To further advance prosecution, the above limitations are interpreted as being supported by both supporting means and a user which is in agreement with the specification.

Appropriate correction is required.

Specification

7. The disclosure is objected to because of the following informalities:

Typographical error.

<**L17**> should be <**L18**> (TABLE 2, the last lens should be **L18** not **L17**).

“ ... the **x-axis** is set in the **back and forth** direction ... the **y-axis** is set in the **right and left** direction ...” (Col. [0178]) should be

“ ... the **y-axis** is set in the **back and forth** direction ... the **x-axis** is set in the **right and left** direction ...”

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim **3** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bolas et al. (US Patent No. 5253832 (already of record))**.

Regarding Claim **3**, **Bolas et al.** teach an image display device (**12**) that with it, by a portion other than a user (**10**), being supported so that said image display device is movable in the three-dimensional directions in space and being supported so that said image display device is rotationally movable in the three-dimensional directions (Col. **4**, Ln. **3-16**, Ln. **22-26**, FIG. **1**), is in contact with the face of the user and is movable and rotationally movable in accordance with the movement of the face of the user (Col. **3**, Ln. **64-68**, Col. **4**, Ln. **1-2**, FIGs. **1 & 2**), said image display device being characterized in that it has a plurality of rotational movement shafts (**18** and **20** of FIG. **1**) of said image display device.

Bolas et al. do not expressly teach in that each of the rotational movement shafts passes through the vicinity of the gravity center of said image display device.

However, it is obvious for one skill in the art to recognize that **Bolas et al's** each of the rotational movement shafts would pass through the vicinity of the gravity center of the image display device depending on the shape, size, and mounting position of the display (see Col. **4**, Ln. **3-16**, Ln. **22-26**, FIG. **1**). For example, when a display with size and shape concentrating on one side, the mounting axes must be on the same side, preferably at the center of gravity, for the benefit of ergonomically support user's

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movement and reducing the weight and inertia by canceling out the torque created from the center of gravity and distance to mounting axes.

9. Claims **1**, **2**, and **4-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bolas et al. (US Patent No. 5253832)** in view of **Chen et al. (US Patent No. 5822127)**.

Regarding Claim **1**, **Bolas et al.** teach an image display device (**12**) that with it being supported by a portion other than a user (**10**), is in contact with the face of the user and is movable in accordance with the movement of the face of the user (Col. **3**, Ln. **64-68**, Col. **4**, Ln. **1-2**, FIGs. **1 & 2**).

However, **Bolas et al.** do not explicitly show that the image display device being characterized in that the gravity center of said image display device is, when it is worn by the user, located on the nearer side of the occipital region compared with the eyeballs and on the nearer side of the neck compared with the eyeballs.

In the same field of endeavor, **Chen et al.** teach that the image display device being characterized in that the gravity center of said image display device is, when it is worn by the user, located on the nearer side of the occipital region compared with the eyeballs and on the nearer side of the neck compared with the eyeballs (i.e. due to the arrangement of the image display device structures, the center of gravity would be in the posterior of the mandible or substantially near occipital region; Col. **5**, Ln. **28-40**, Col. **7**, Ln. **6-8**, FIGs. **2 & 3**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Bolas et al.** teaching of an image display device that with it being supported by a portion other than a user, is in contact with the face of the user and is movable in accordance with the movement of the face of the user with **Chen et al.** teaching of the image display device wherein the gravity center of is, when it is worn by the user, located on the nearer side of the occipital region in order to benefit of improving user interface and reduce the weight and force on user's head and neck by having an image display device that with it being supported by a portion other than a user, is in contact with the face of the user and is movable in accordance with the movement of the face of the user, and wherein the gravity center of is, when it is worn by the user, located on the nearer side of the occipital region.

Regarding Claim **2**, **Chen et al.** teach an image display device according to claim 1, characterized in that the gravity center of said image display device substantially coincides with the average, 3-axes' rotational movement center of the neck of a human who is supposed to use said image display device (Col. **5**, Ln. **28-40**, Col. **7**, Ln. **6-8**, FIGs. **2 & 3**).

Regarding Claim **4**, **Bolas et al.** teach an image display device according to claim 1 that with it, by a portion other than a user, being supported so that said image display device is movable in the three-dimensional directions in space and being supported so that said image display device is rotationally movable in the three-dimensional directions (Col. **4**, Ln. **3-16**, Ln. **22-26**, FIG. **1**), is in contact with the face of the user and is movable and rotationally movable in accordance with the movement of

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the face of the user (Col. 3, Ln. 64-68, Col. 4, Ln. 1-2, FIGs. 1 & 2), said image display device being characterized in that each of the rotational movement shafts of said image display device passes through the vicinity of the gravity center of said image display device (obviously due to the shape, size, and structure of 12; Col. 4, Ln. 3-16, Ln. 22-26, FIG. 1).

Regarding Claim 5, **Bolas et al.** teach an image display device according to claim 3 or 4, characterized in that to each of said rotational movement shafts is set a rotational movement amount measuring sensor and in that said image display device has a computing device that determines the output image of said image display device in accordance with the outputs from said rotational movement amount measuring sensors (Col. 6, Ln. 23-28, FIGs. 4-6).

Regarding Claim 6, **Bolas et al.** teach an image display device according to claim 1 or 3, characterized in that said image display device is connected by a string-like flexible member (64 of FIG. 4) with a counterweight (28 of FIG. 1) and in that by suspending, via a pulley set ((68); Col. 4, Ln. 57-63, FIG. 4) on a two-dimensional-direction driving mechanism movable on a horizontal flat surface supported by the floor, said image display device and counterweight, said string-like flexible member supports said image display device (FIG. 1).

10.. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bolas et al. (US Patent No. 5253832 (already of record))** in view of **Meredith (US Patent No. 4257062)**.

Regarding Claim 7, **Bolas et al.** teach an image display device according to claim 1 or 3.

However, **Bolas et al.** do not teach that the image display device is, via sandwiching means for sandwiching the face from the right and left side face directions that function also as earphones, in contact with the face of the user and in that the positional relationship between the face and the image display device is substantially fixed by said sandwiching means.

In the same field of endeavor, **Meredith** teaches the image display device is, via sandwiching means for sandwiching the face from the right and left side face directions that function also as earphones, in contact with the face of the user and in that the positional relationship between the face and the image display device is substantially fixed by said sandwiching means (Col. 2, Ln. 59-68, FIG. 1).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Bolas et al.** teaching of an image display device according to claim 1 or 3 with **Meredith** teaching of the image display device is, via sandwiching means that function also as earphones, and in that the positional relationship between the face and device is substantially fixed by said sandwiching means in order to benefit of accurately providing quality video and audio to user by having teaching of an image display device according to claim 1 or 3, and sandwiching means that function also as earphones, and in that the positional relationship between the face and device is substantially fixed by said sandwiching means.

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11. Claims **8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bolas et al. (US Patent No. 5253832 (already of record))** in view of **Takahashi (US Patent No. 6014261)**.

Regarding Claim **8**, **Bolas et al.** teach an image display device according to claim 1 or 3.

However, **Bolas et al.** do not teach that the image display device has a function of projecting and imaging, via a relay optical system, a light emitted from a two-dimensional type image forming device onto the retinas in the right and left eyeballs, with the imaged image being a wide range image having a field of view angle of ± 22.5 degrees or more.

In the same field of endeavor, **Takahashi** teaches that the image display device has a function of projecting and imaging, via a relay optical system, a light emitted from a two-dimensional type image forming device onto the retinas in the right and left eyeballs, with the imaged image being a wide range image having a field of view angle of ± 22.5 degrees or more (Col. 2, Ln. 59-68, FIG. 1).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Bolas et al.** teaching of an image display device according to claim 1 or 3 with **Takahashi** teaching of the image display device has a function of projecting and imaging, via a relay optical system, a light emitted from a two-dimensional type image forming device onto the retinas, with a field of view angle of ± 22.5 degrees or more in order to benefit of enhancing virtual reality experience by having an image display device according to claim 1 or 3, and the image display device

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has a function of projecting and imaging, via a relay optical system, a light emitted from a two-dimensional type image forming device onto the retinas, with a field of view angle of ± 22.5 degrees or more.

Regarding Claim **9**, **Bolas et al.** teach an image display device according to claim 1 or 3.

However, **Bolas et al.** do not teach that the image display device has a two-dimensional type image forming device, light diffusing bodies, and relay optical systems transmitting and projecting images onto each user's eyes.

In the same field of endeavor, **Takahashi** teaches that the image display device has a two-dimensional type image forming device, first (for the right eye use) and second (for the left eye use) light diffusing bodies, first (for the right eye use) and second (for the left eye use) relay optical systems that respectively relay a light emitted from said two-dimensional type image forming device to the first (for the right eye use) and second (for the left eye use) light diffusing bodies, and first (for the right eye use) and second (for the left eye use) eyepiece optical systems that respectively project and image the transmitted images of said first and second diffusing bodies onto each of the retinas in the right and left eyeballs (Col. **12**, Ln. **20-24**, Col. **1**, Ln. **60-65**, FIG. **21(b)**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Bolas et al.** teaching of an image display device according to claim 1 or 3 with **Takahashi** teaching of the image display device has a two-dimensional type image forming device, light diffusing bodies for each eyes, in order to benefit of reducing the weight and inertia of the image display device by

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having an image display device according to claim 1 or 3, and a two-dimensional type image forming device, light diffusing bodies, and relay optical systems transmitting and projecting images onto each user's eyes.

12. Claim **10** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bolas et al. (US Patent No. 5253832 (already of record))** in view of **Takahashi (US Patent No. 6014261)** and further in view of **Spitzer et al. (US Patent No. 6879443)**.

Regarding Claim **10**, **Bolas et al.** and **Takahashi** teach an image display device according to claim 9.

However, **Bolas et al.** and **Takahashi** do not teach that the image display device has an adjusting mechanism that adjusts the distance between the optical centers of the first and second eyepiece optical systems and the distance between the first transmitted image and the second transmitted image having transmitted through said light diffusing bodies so that those distances become equal to the eye-width of the user.

In the same field of endeavor, **Spitzer et al.** teach that the image display device has an adjusting mechanism that adjusts the distance between the optical centers of the first and second eyepiece optical systems and the distance between the first transmitted image and the second transmitted image having transmitted through said light diffusing bodies so that those distances become equal to the eye-width of the user (Col. **4**, Ln. **19-26**, Ln. **31-39**, FIGs. **1, 4, & 5**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Bolas et al.** and **Takahashi** teachings of an image display device according to claim 9 with **Spitzer et al.** teaching of adjusting

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the distance between the optical centers of the eyepieces and the distance between the transmitted images through the light diffusing bodies equal to the eye-width of the user in order to benefit of accommodating users' unique physical compositions by having an image display device according to claim 9 and adjusting mechanism for correcting differences between the eyes of users.

13. Claims **11-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bolas et al. (US Patent No. 5253832 (already of record))** in view of **Takahashi (US Patent No. 6014261)** and further in view of **Oshima et al. (US Patent No. 4268127)**.

Regarding Claim **11**, **Bolas et al.** and **Takahashi** teach an image display device according to claim 9.

However, **Bolas et al.** and **Takahashi** do not teach that the light diffusing bodies, which diffuse light, are each a transmission type diffusing plate constituted by a transmission plate on which abrasive grains of a metal oxide or metallic carbide of which grain diameter is precisely controlled with micron-grade are coated.

In the same field of endeavor, **Oshima et al.** teach the light diffusing bodies, which diffuse light, are each a transmission type diffusing plate constituted by a transmission plate on which abrasive grains of a metal oxide or metallic carbide of which grain diameter is precisely controlled with micron-grade are coated (Col. **2**, Ln. **61-68**, Col. **3**, Ln. **1-2**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Bolas et al.** and **Takahashi** teachings of an image display device according to claim 9 with **Oshima et al.** teaching of a

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transmission plate on which abrasive grains of a metal oxide or metallic carbide of which grain diameter is precisely controlled with micron-grade are coated in order to benefit of improving image quality for use with high definition or resolution by having an image display device according to claim 9 and a transmission plate on which abrasive grains of a metal oxide or metallic carbide of which grain diameter is precisely controlled with micron-grade are coated.

Regarding Claim **12**, an image display device according to claim 11, wherein **Oshima et al.** teach that the abrasive grains are made of at least one of silicon carbide, chromium oxide, tin oxide, titanium oxide, magnesium oxide, and aluminum oxide and in that said transmission plate is a polyester film (Col. **2**, Ln. **61-68**, Col. **3**, Ln. **1-2**).

14. Claims **13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bolas et al. (US Patent No. 5253832 (already of record))** in view of **Takahashi (US Patent No. 6014261)** and further in view of **Sedlmayr (US Patent No. 5347644)**.

Regarding Claims **13** and **14**, **Bolas et al.** and **Takahashi** teach an image display device according to claims 8 and 9 respectively.

However, **Bolas et al.** and **Takahashi** do not teach that the two-dimensional type image forming device has three pieces of two-dimensional transmission type or reflection type liquid crystal device elements, each corresponding to each of the colors of green (G), blue (B), and red (R), which are perpendicular to the light beam emitting direction, an illumination device that illuminates the liquid crystal device elements, and

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an image combining device that combines the lights emitted from said liquid crystal device elements into a single image.

In the same field of endeavor, **Sedlmayr** teaches the two-dimensional type image forming device has three pieces of two-dimensional transmission type or reflection type liquid crystal device elements, each corresponding to each of the colors of green (G), blue (B), and red (R), which are perpendicular to the light beam emitting direction, an illumination device that illuminates the liquid crystal device elements, and an image combining device that combines the lights emitted from said liquid crystal device elements into a single image (Col. 2, Ln. 61-68, Col. 3, Ln. 1-2).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Bolas et al.** and **Takahashi** teachings of an image display device according to claims 8 and 9 with **Sedlmayr** teaching of the image forming device having three pieces G, B, and R of transmission or reflection LCD elements, being perpendicular to the light emitting, an RGB illumination device, and combining RGB lights into a single image in order to benefit of improving quality image and virtual experience by having an image display device according to claims 8 and 9, wherein the image forming device having three pieces G, B, and R of transmission or reflection LCD elements, being perpendicular to the light emitting, an RGB illumination device, and combining RGB lights into a single image.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Scharfenberg (US Patent No. 4866229 (already of record)).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VTL/

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